Missile Project Became A $3.9 Billion Misfire

Multi-Service Endeavor Faltered From Start

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Designed and funded in secrecy, it was to be a missile like none before it—invisible to radar, guided by on-board computers and launchable by any of three military services.

But after nine years of delays, contract disputes, failed tests and $3.9 billion in taxpayer funds, the Clinton administration terminated the program a few months ago.

No one was held accountable for the demise of the Tri-Service Standoff Attack Missile, known as TSSAM (pronounced TEE-sam), pictures of which were officially released just months before the project was scrapped. Defense Secretary William J. Perry attributed the cancellation simply to "significant development problems" and production costs that were "unacceptably high."

But the story of TSSAM, pieced together from interviews, provides a cautionary tale about Pentagon procurement gone awry. It reveals a mismanaged program, overly ambitious from the start, that ran into trouble early and was allowed to go on faltering for nearly a decade.

The military insisted it needed such a weapon to penetrate enemy air defenses and strike with pinpoint accuracy. The Air Force, Navy and Army agreed to develop a common missile to save money, then raised costs by requesting numerous different models of TSSAM.

Northrop Corp. committed to doing the job at a preset price, then realized it had underestimated the challenge and was handicapped by the program's secrecy in recruiting experienced staff. The company and the Pentagon spent countless hours battling over cost overruns,

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which added to bureaucratic paperwork, delays and defensiveness.

On Capitol Hill, some House members moved repeatedly to shut down the program, but TSSAM continued to receive strong Senate support, particularly from Sam Nunn (D-Ga.), then chairman of the Armed Services Committee, whose home town stood to benefit from TSSAM production.

TSSAM's lessons are especially relevant for the Clinton administration, which plans to initiate a "son of TSSAM" program this summer. Pentagon officials say they still need a medium-range, autonomously guided, radar-evading missile. They hope to capitalize on TSSAM's positive legacies, which include breakthroughs in stealth technology and missile guidance and control systems.

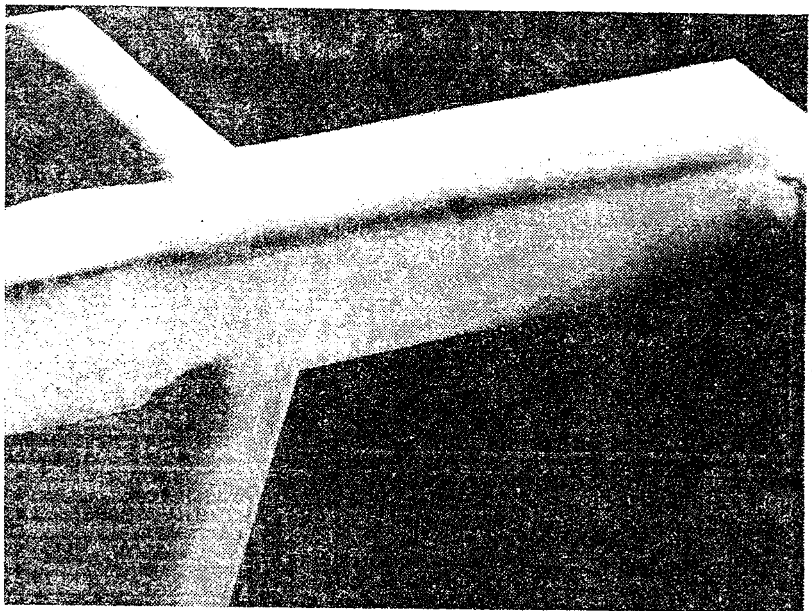
In fact, some of the same procurement themes that TSSAM was supposed to affirm—the greater affordability of weaponry when shared by all military branches, the application of stealth technology, the benefits of extended-range, precision weapons—have become core principles in Pentagon planning. Defense officials say TSSAM's troubles should not discredit these principles but rather should serve as a warning for better planning, more flexible contracting and more rigorous stewardship in future high-risk development projects.

Unprecedented Demands

TSSAM was authorized in 1985 as the first multi-service missile, a project promoted largely by Congress to push the armed forces into developing common weapons rather than pursuing individual designs and redundant capabilities. Strategically, the stealthy TSSAM was presented as a logical complement for radar-evading jet fighters and bombers. It also was intended to extend the usefulness of non-stealthy aircraft by giving them a high-tech missile they could fire while maintaining their distance from enemy radar.

The Air Force, Navy and Army acceded to merging the separate development programs they had started, but it was a shotgun marriage that never took completely. Instead of going for a genuine one-size-fits-all missile, the services asked that TSSAM come in various models to fit on eight platforms and carry five kinds of warheads.

Never had more demands been placed on a single weapon system to meet such a variety of operating en-

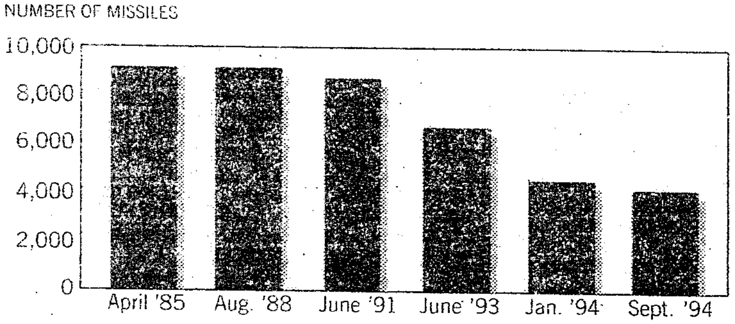


U.S. AIR FORCE PHOTO

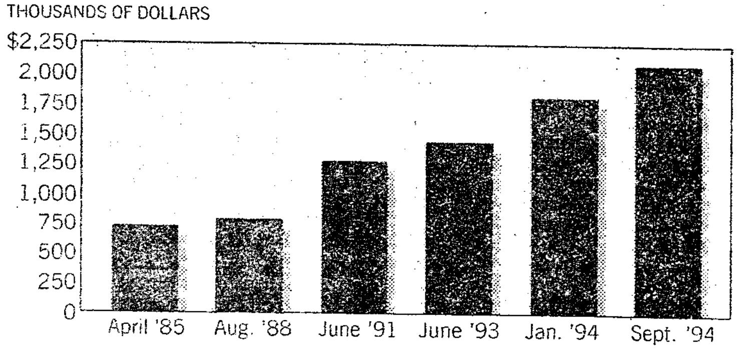
The Tri-Service Standoff Attack Missile is shown in a photo released shortly before the project was scrapped by the Pentagon last December. Defense officials said the photograph was retouched to protect classified detail.

BUMPY COURSE FOR CRUISE MISSILE

As the planned *orders for the Tri-Service Standoff Attack Missile declined . . .*



. . . the cost *per missile nearly tripled.*



SOURCE: General Accounting Office

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vironments.

The Air Force wanted a missile it could fire from F-16 fighters or drop from B-52, B-1 or B-2 bombers to strike—more than 100 miles away—"soft" targets like airfields and "hard" targets like reinforced concrete bunkers. The Navy initially required a missile that would shoot from F-18, A-6 or A-12 aircraft and penetrate not only hardened targets on land but moving ships at sea. The Navy also wanted the missile to have a "man-in-the-loop" capability, enabling it to receive instructions in flight from the cockpit; the Air Force preferred a "fire-and-forget" approach.

And the Army wanted a missile that could be propelled out of canisters in its Multiple Launch Rocket System and, carrying cluster munitions, hit groups of targets like tank columns.

In addition to integrating TSSAM into various service systems, its creators faced the challenge of engineering many unprecedented feats. Making a stealthy missile was only one of them. TSSAM's infrared seeker, which homes in on a target using complex signal processing algorithms; its navigation system, which draws on satellite global positioning data; and its control system, which involves a series of intricate mechanical and electronic links, all had to be invented.

By contrast, the F-117 jet fighter, another supersecret stealth system under development at the time, was able to model its engine, landing gear, avionics and other components after existing aircraft designs.

"TSSAM was a pretty complex undertaking," said Paul Kaminski, who worked on the F-117 in the early 1980s and is now undersecretary of defense for acquisition and technology. "I don't think the people undertaking it really had time to get this all on board."

They weren't given much time. The service programs were merged in June 1985. The Pentagon requested bids for TSSAM in October. Negotiations were completed by the following March, and the contract was awarded in April 1986 to Northrop, which was selected over Lockheed Corp.

The Pentagon insisted on a fixed-price contract, which was in vogue in the 1980s but would become a primary factor in TSSAM's undoing. The contract set a price ceiling, meaning Northrop bore all the risk and could get paid more only if the government was responsible for changes in the project along the way. Northrop would have preferred a cost-plus approach, allowing a certain profit over unforeseen development costs.

"You can do a fixed-price contract if you've built one before or if you know all the technology," said a senior Air Force general who agreed to discuss TSSAM, on condition he not be named. "But it certainly isn't the way to go when you're talking about a risky project using never-before-tried technology. You need some flexibility."

Nonetheless, Northrop accepted the terms.

"We didn't have a lot of choice—it was take it or leave it," said a former Northrop executive who did not want his name used. "But because it was a high-volume, tri-service program, we figured the potential was there to more than cover all the costs."

Delays and Miscalculations

Northrop also planned to employ some low-cost production techniques and had been assured by key subcontractors that the project was doable. Moreover, Northrop was counting on minimal governmental interference in what had been touted as a model of streamlining in Pentagon acquisition.

"The way this contract was written in 1986 was one of the strangest things," a senior Air Force official said. "It was very vague. Basically it said, 'Do what you have to do to develop this thing.' "

But the Pentagon and Northrop had badly miscalculated. About 18 months after beginning TSSAM, Northrop served notice that it would never again undertake development of a weapon system on a fixed-price basis. By then, however, the company was mired in program delays and rising costs.

Relations between Northrop and the Pentagon soured as both built up large administrative staffs to document arguments about who was responsible for what program change and what cost overrun.

"Things became extremely bureaucratic," Kent Kresa, Northrop's chief executive officer, recalled in an interview. "Everyone felt he had to look out for himself."

That meant not only spending considerable time in contractual disputes. It also gave Northrop little incentive to risk new, more creative approaches to the job, Kresa said.

Defense officials complained that Northrop was managing the program poorly. Turnover among senior people was high; programmers stumbled over how to write the complex computer software that would guide the missile in flight and identify the target; Northrop appeared woefully short of employees with the experience needed to build such a sophisticated missile.

With its B-2 bomber program also experiencing difficulty, Northrop clearly was stretched.

"I think they took on more than they could probably do," Kaminski said.

Northrop complained that the Pentagon was not providing the aircraft performance data and other information necessary to design the missile. The company objected that defense officials were micromanaging the project and speaking too often not with a united voice but three separate service voices.

As early as January 1989, the General Accounting Office concluded that the program "was experiencing more than the normal amount of difficulty during development," GAO officials said in written answers to questions from The Washington Post. From then on, the GAO repeatedly urged a resistant Pentagon to delay production until the development problems could be resolved.

By 1989, when production was originally scheduled to start, the program had fallen many months behind, and Northrop presented the government with $1.5 billion in claims for additional costs. The company settled for $700 million the next year.

Support From Nunn

In Congress, meanwhile, members privy to the classified details of the program were voicing concern. But efforts by the House to scuttle or scale back the troubled project were resisted in the Senate by Nunn and others.

It was in Nunn's home town of Perry, Ga., that Northrop had erected the plant that was to build the missile, although even opponents of TSSAM said the senator's commitment to the program went beyond parochial interests. He had been an avid supporter of other stealth programs, including the F-117 and B-2, and he vigorously defended the strategic rationale for TSSAM.

"Nunn's staff was as determined as I've ever seen them that TSSAM was going to be built," said a House staff member who spoke on condition of anonymity. In fact, Nunn's staff came to perceive challenges to TSSAM essentially as attempts to gain leverage over the senator for political deals in House-Senate conference meetings.

"I never paid any price for TSSAM," Nunn said in an interview.

Inhibiting wider scrutiny of TSSAM was its highly classified nature. Even today, many who were associated with it remain reluctant to discuss its history because much information still is top secret.

Northrop's Kresa said the secrecy surrounding this and other cruise missile projects complicated his company's attempts to hire qualified people to develop TSSAM and prevented Northrop from learning about General Dynamics Corp.'s experiences engineering the Tomahawk and Advanced Cruise Missile.

Northrop had promised to produce TSSAM at $728,000 per missile, based on orders totaling 9,050. But repeated delays and rising costs prompted the Army to drop out of the program in 1993. By last year, the number of projected orders had fallen to 4,156 and the price per missile had climbed to $2.1 million.

For all its difficulties, TSSAM might well have stayed alive had the Cold War not ended and budget pressures not prompted Pentagon officials to cut back on programs.

The Air Force continued to push for TSSAM, saying the missile's unique capabilities were still needed. Management relations on the project had begun to improve after monthly conferences were instituted between Kresa and senior Pentagon officials. Northrop officials say the biggest design challenges—stealthiness, maneuverability, autonomous guidance—had been achieved.

Too Many Test Failures

But TSSAM's ability to perform reliably remained uncertain. Its initial test results compared favorably to other cruise missile development programs. But in the final nine tests between mid-1993 and late 1994, TSSAM flopped seven times, eroding confidence in the weapon among Pentagon officials.

Northrop argued that the test failures did not mean the missile was unreliable, pointing out that each failure had a different cause. But too many of the causes, Pentagon officials said, involved things that should not have been going wrong.

Perry finally killed the program in December. While the Pentagon's desire for a multi-service, medium-range, precision-guided, stealthy missile has not gone away, defense officials said the next time around, they will try for something less ambitious and more affordable—and under a more flexible contract.

Northrop—now Northrop Grumman Corp. after last year's merger—has declared $622 million in losses on TSSAM and is hoping to reach a negotiated settlement with the Pentagon over the additional costs of closing down the project. At the plant in Perry, meanwhile, which was to produce the high-tech missile, Northrop is building doors, frames, floor beams and other mundane parts for Boeing Corp.'s 747 commercial airliner.